growth of the Pandanus was not one of the least obstacles encountered in the ascent. One tree fern (*Alsophila Rebeccæ*, F. Muell.) and a climbing fern (*Gleichenia Hermanni*, R. Br.), which runs up to a height of 50 or 60 ft., were so abundant that in some places a way had to be cut through them. *Alsophila Rebeccæ* was occasionally so much entangled with other plants, such as *Smilax elliptica*, R. Br., *Flagellara indica*, Willd., &c., that to penetrate them was a work of extreme difficulty.

The top of the range is 5,300 ft. above the sea-level, and in clear weather, considering its situation, the surrounding scenery must be very fine; at the time Mr. Hill and his party visited it, however, everything below was hidden by mist. Though the main purpose of the expedition was the exploring of a certain portion of the north-east coast of Queensland with the view of ascertaining the adaptability of the soil for cultivation, the result was not without interest in a botanical point of view, namely, the discovery of new plants. Mr. Hill records two new palms, discovered at an altitude of 2,000 ft., one of which was a beautiful plant about 20 ft. high, with leaves or fronds about 20 ft. long, and a stem about 9 in. in diameter; the other grew about 12 ft. high, and its stem was about 3 in. in diameter; this appeared to be a species of *Kentia*. A fine proteaceous tree about 60 ft. high, with splendid crimson flowers, was seen at 2,500 ft., and at 500 ft. lower down a beautiful new orchid, a species of *Anœctochilus*, was discovered. Besides these, other new plants of more or less interest were seen, which in course of time will no doubt find their way to this country.

It is not so very long since Baron Mueller recorded the discovery of some colossal trees of the Eucalyptus group in the back gullies of Victoria, trees that rivalled, and even exceeded, in height the largest known Wellingtonia. Now Mr. Hill tells us of a splendid Dammara tree passed by him in his descent from the top of the range, the height of which he roughly estimated at not less than 120 ft., with a trunk 4 ft. through. *Dammara robusta*, C. Moore, is the only species at present recorded in Australia, and this is found rather abundantly in the Queensland forests, and is stated to grow to a height of 150 ft., so that in the matter of height the tree seen by Mr. Hill does not exceed any previously known, but a trunk 12 ft. in circumference is not a small tree.

We hope that Mr. Hill will be enabled to make a further exploration of this part of Queensland, and publish the account of his journey in a more detailed form.

JOHN R. JACKSON

THE TOCK-TAY, OR LARGE HOUSE LIZARD OF EASTERN BENGAL

THIS noisy but harmless animal generally finds a lodgement in the bamboo and mat houses of the district that are anywhere near the jungle. It is also fond of living in hollow trees, which give great resonance to its loud and strongly staccatoed cry of *tock-tay*. It is of a green tint, mottled over with red spots, and suckered feet like its smaller congener, the Tick-tickee, enable it to run under beams and bamboos. Its cry is, however, very different from the gentle *tick-tick* of the small lizard, being sufficient at night to awake the soundest sleeper. He begins with a loud rattle as if to call attention; this is followed by another and more imperative rattle, and when everybody may be supposed to be listening, he strikes in deliberately with *tock-tay*—a moan—*tock-tay*—another moan—*tock-tay*—a last and final moan, with which he winds up, not to be heard again for an interval.

In the way of edibles he is fond of a good crust, and the common dung-beetle frequently furnishes him with a *pièce de résistance*. That insensate insect becomes an easy prey, owing to his heedless rattle-dum-clash ways; he is the great extinguisher of lights at night in native houses, and Europeans are also familiar with his strong sustained drone, varied by intervals of silence when he has dashed against some rafter or projection, or given himself a heavy fall; but he is not to be discouraged, and is soon up and droning about as dismally as ever.

The drone, however, is sometimes suddenly quenched without the consequent thump on the floor, and when this is followed by a crunching sound overhead one may safely infer that it is Tock-tay who has been lying in wait for him and has snapped up his prey.

These lizards may easily be caught during the day by slipping a noose over their necks while they are asleep in an exposed position; and when so caught they snarl, growl, and snap at their captor in a very ferocious way. I have not heard, however, that they are venomous.

C. B.

NOTES

THE cause of Technical Education is already much indebted to Sir Joseph Whitworth, who has just added to his former judicious benefactions by proposing to found, in connection with Owens College, Manchester, King's College, London, and University College, London, a certain number of Whitworth Exhibitions, in order to fit young men having a mechanical instinct and some little experience better to become candidates for the Whitworth Scholarships. Competitors for these exhibitions must comply with certain reasonably easy conditions, and the successful competitors will be entitled to receive during the two years next following the examination, instruction in all such subjects (being part of the course of each College) as shall better prepare them for the Whitworth Scholarship Examination—viz., practical plane and solid geometry, machine drawing, mathematics, theoretical mechanics, applied mechanics, and freehand drawing. Sir Joseph Whitworth will pay each College annually for four years, as a trial of the success of his proposal, the sum of 100*l.* for or towards, at the option of each College, the academical expenses of the exhibitioners.

THE Cambridge Mathematical Tripos has been published; it contains this year eighty-six names, of whom twenty-eight are Wranglers, thirty-four are Senior Optimes, and twenty-four Junior Optimes. The Senior Wrangler is Mr. John William Lord, of Trinity College, a son of the Rev. Isaac Lord, of Walton, near Ipswich, lately a Baptist minister in Birmingham. He was educated at Cambridge House, Birmingham, then at Amersham Hall School, near Reading. In 1868 he obtained honours at the matriculation examination of the University of London. At the examination for M.A., in June 1874, he was awarded the gold medal for mathematics. In 1870 he entered Trinity College, Cambridge, when he was awarded an open scholarship for mathematics, and subsequently was elected a foundation scholar. He was declared equal in merit for the Sheepshanks Astronomical Exhibition with Mr. Lewis, of Trinity College. The Rev. E. W. Blore was his college tutor, while he received private tuition from Mr. E. J. Routh, of St. Peter's College. Mr. Lord was distinguished as an athlete, and regularly rowed in his College boat.

THE Minister of Finances of France has at last consented to pay into the hands of M. Eichens the money which he required to begin the construction of the meridian telescope presented by the banker Bishofsheim to the Paris Observatory. M. Leverrier's letter noticing the fact was gazetted. The financial rules of the French Administration are so stringent that they could not be altered for the defence of the country during the Franco-German war; consequently it is an indication of the growing spirit of the times to see they are no longer available for obstructing the path of science. The opposition of the Minister to the payment of the 1,300*l.* which had been placed in his hands by M. Bishofsheim for certain purposes had attracted much notice, and the end of the difficulty has created quite a sensation.

The Observatory of Paris is to give a series of *soirées* on the first Monday of each month. Instruments will be placed at the disposal of visitors for observing celestial phenomena, and the most important inventions will be exhibited and explained.

The method of electing the President of the French Academy of Sciences is very peculiar. In the beginning of January each year a member is nominated Vice-president for the year, and becomes President the following year without being re-elected. The appointment is made alternately in the classes of Physical Science and Mathematics. It being the turn this year of the latter section, Admiral Paris has been elected Vice-president and will be President for 1876. The President actually in office is M. Frémy, the celebrated chemist. M. Paris was born at Brest in 1806, and his first voyage was on board the *Astrolabe*, in which he circumnavigated the globe, under Dumont d'Urville, in 1826. He lost his left hand at Pondicherry in 1837, when visiting a factory. He has written many books on steam navigation, and is a member of the Navigation Section of the Academy. He was created an admiral in 1858.

There exist in the largest French provincial towns local Academies, the proceedings of which seldom attract attention beyond their immediate vicinity; but they never lose an opportunity of following the lead of the Academy of Sciences of Paris. The Paris Academy having appointed M. Bertrand successor to M. Elie de Beaumont, as perpetual secretary, the Academy of Toulouse shortly afterwards sent to M. Bertrand a brevet of membership to fill the place vacated by the demise of his predecessor. As M. Elie de Beaumont was a member of the Academies of Lyons, Bordeaux, Marseilles, &c., M. Bertrand has a very good chance to acquire without moving all the academical honours which belonged to his predecessor, except in the cities where he was himself previously a local academician.

The annual conference for regulating the operations of the Mint in connection with international coinage was held recently at the French Foreign Office, Paris. Except Greece, representatives of all the other nations who are parties to the international convention for the inter-circulation of decimal coins, were present. The system extends now to France, Italy, Belgium, Switzerland, and Greece. No measures of importance were passed, but it is supposed that some useless restrictions on coinage will be abolished in 1876.

The *Kölnische Zeitung* of Jan. 19 contains a letter from the celebrated African traveller, Dr. G. Schweinfurth, from which we learn that, by order of the Khedive of Egypt, Herr Rohlfs has distributed among a number of eminent personages, scientific societies, and men of science, one hundred albums, magnificently got up, and containing a collection of fifty large photographs of the Libyan Desert, by Remelé, of Gastendonk, near Aldekerk. Remelé accompanied Herr Rohlfs' expedition of last winter into the deserts of Africa, and has, for the first time, photographed landscapes of the district mentioned in a highly artistic manner. Whoever knows the different characteristics of the African climate compared to the European one, will understand that considerable skill was required to produce real works of art under such altered conditions. It is to be regretted that the handsome collection cannot be obtained by purchase: only a few favoured ones can derive from it that enjoyment that every lover of nature would naturally experience from photographs so highly interesting.

We learn from the *Kölnische Zeitung* that on January 20 the first meeting of the Italian division of the International Commission for the Measuring of the Meridian took place at the Military Topographical Office at Naples. The members are General de Vecchi (president), General Ricci, Major Ferrero (secretary), the astronomers De Gasparis (Naples), Respigi (Rome), Santini (Padua), Schiapparelli (Milan), and Professors Betocchi, Schiavoni, and Oberholtzer. The meeting, in making out the programme for 1875, continued the work begun at the autumn meeting at Dresden.

In reference to the proposed Channel Tunnel between France and England, we may refer our readers to Nature, vol. i., pp. 160, 303, 631, and vol. x., p. 181, where the scientific bearings of the subject are pretty fully discussed. While on this matter we may state, on the authority of *La Nature*, that there has been in existence for some time in Spain an Inter-continental Railway Company, whose object is to connect Europe and Africa by a tunnel underneath the Straits of Gibraltar, the maximum depth of which is 819 metres.

Dr. Coues has published, in the Proceedings of the Philadelphia Academy, a synopsis of an elaborate work by him upon the mice of North America, based upon the many thousands of specimens in the Smithsonian Institution. In this he considerably reduces the alleged number of species, although describing some that he considers new.

Dr. Regel, in an appendix to the second fascicule of his "Descriptiones plantarum novarum et minus cognitarum in regionibus Turkistanicis, etc., collectis," defends his theory of the descent of the grape-vine of the Old World, in its numerous varieties, from *Vitis labrusca* and *V. vulpina*, two New World species, the former extending to Japan. *V. parvifolia* and *lanata* of Roxburgh, Indian species, he identifies with the foregoing, and thus traces out the relationship of the grapes of the Old and New Worlds. Although Dr. Regel can see his way to this extreme of variation, he still holds fast to the opinion that "the specific limits of any species whatsoever were called into existence (or defined) with the appearance of the first individual of that species, and that there is no gradual evolution from the lower to the higher organisms.

A second edition of Hooker's "Synopsis Filicum" has just appeared. It will be remembered that the late Sir William Hooker left the original work unfinished, and that it was taken up and completed by Mr. J. G. Baker. The second edition has also been prepared by the same gentleman. A period of about six years has elapsed since the first publication, and the edition before us contains four hundred additional species. The idea of a species as developed in this work is very broad and comprehensive; hence this number represents nearly as many distinct new forms, very few coming under the denomination of "critical species." The total number of species admitted now exceeds 2,600. The additional species are given in an appendix occupying seventy-seven pages. In the body of the work a number of bad species have been reduced to their respective types, and their places taken by new species. A relatively large proportion of the new species are tree-ferns—Cyathea, 25; Hemitelia, 11; Alsophila, 25; and Dicksonia, 13; and there are no fewer than sixty new species each of the new genera Polypodium and Nephrodium, in the extended sense given to them in this work. Asplenium is represented by about fifty new species. Only one new genus is given, Diplora, an asplenioid form from Solomon Islands, bringing the total up to seventy-six. Whether the generic and specific limits adopted in this work be accepted or rejected, the book is indispensable to all pteridologists. We may mention that the complete index has been issued in a separate form, which will be very useful to all lovers of ferns and horticulturists generally.

An account has reached us of the Memorial Meeting of the Boston Society of Natural History, on the 7th of October, 1874, held to mark the death of Dr. Jeffries Wyman in September last, of whose life we gave some account shortly after. The principal address at the meeting was by Prof. Asa Gray, who sketched Dr. Wyman's life and his work as a biologist. Prof. Gray speaks in very high terms of Dr. Wyman's work. In the memoir on *Troglodytes Gorilla*, read before the Boston Society in 1847, and of which the osteology and introductory history is by Dr. Wyman, and in the subsidiary papers, Prof. Gray says, "may be found the substance of all that has since been brought forward, bearing upon the osteological resemblances and differences between man and apes."

We note the receipt of the Annual Report for 1873 of the Birmingham Natural History and Microscopical Society, one of the most energetic of this class of societies in the kingdom. There is a very interesting address by the retiring president, Mr. W. R. Hughes, F.L.S., in which he reviews briefly the recent progress of the study of Marine Zoology. We are glad to see that the Society contemplates going so far afield on an exploring excursion as the Mediterranean; our readers may remember that in the autumn of 1872 they made a very successful dredging excursion to Teignmouth. Mr. Hughes suggests that the Birmingham and similar societies should combine in a petition to the proper quarter to obtain any surplus specimens from the *Challenger* collection which may remain after the British Museum and other headquarters for specimens have been supplied. The suggestion seems to us a very reasonable one, though it may be found that after all the *Challenger* specimens will not go very far in this respect. We are glad to see that the Society continues to be increasingly prosperous.

We are gratified to learn that a Natural History Society and Field Club was successfully inaugurated at Watford on the 23rd ultimo. It has commenced with about fifty members, ladies and gentlemen, and Mr. J. Hopkinson was appointed secretary. We wish the Society every success; it is the only one of the kind in Hertfordshire, and we hope it will set itself in earnest o extend and complete our knowledge of the natural history of that county.

Prof. Hayden has lately printed a catalogue of the publications of the United States Geological Survey under his charge, filling a pamphlet of twenty pages.

In the number of the *Pharmaceutical Journal* for Jan. 23, Mr. E. M. Holmes throws considerable light on the botanical source of the new drug Jaborandi. Prof. Baillon was the first to refer it to a species of *Pilocarpus*, but upon very insufficient materials. Mr. Holmes, however, has succeeded in obtaining better specimens, including some ripe fruits, and from these he arrives at the conclusion that there are two or more distinct varieties of the drug, one of which is very near if not identical with *Pilocarpus pennatifolius*, Lem., another from a species of the same genus not yet known, and another still from a species of *Piper*. These are now in use both in France and England, but several other plants possessing similar properties and known under the same name of Jaborandi are in use in South America. With regard to its physiological action, Mr. Martindale contributes some interesting notes in the *Pharmaceutical Journal* for Jan. 16.

The *Journal of the Society of Arts* quotes an article from the *Journal de la Société d'Horticulture* on indiarubber-producing plants. This paper is a *résumé* of well-known facts relating to these valuable plants, the only point of interest being in connection with the Central American Caoutchouc Tree, *Castilloa elastica*, Cerv., which, we are told, in the district of St. John, in Nicaragua, furnishes employment to from 600 to 800 persons, in drawing off the juice. In the neighbourhood of Panama about 2,000 persons are so employed.

Some official correspondence relating to the conservation of the Government forests in Ceylon has been published in Colombo, from which we learn that a good deal of Satin Wood (*Chloroxylon swietenia*), Calamander (*Diospyros quæsita*), and Ebony (*Diospyros ebenum*), exists in the forests, and that the system of felling trees by the natives for firewood and other uses, though illegal, is still carried on to some extent, many of the natives being quite ignorant of forest reservation, while others are such adepts at stealing that the forest officers are not sufficiently numerous to prevent it.

Col. Playfair, the Consul-General of Algeria, reports that the cultivation of the vine in that country is becoming yearly of greater importance, the advance in the prices of wine in France having given a greater impetus to its cultivation in Algeria. The Sahel, which comprises an area of 125,000 acres, is specially suited to the vine culture, and it is anticipated that this space will some day be nearly covered with the plant. At the time of writing the report, Consul Playfair says, the Phylloxera had not reached Algeria, and the importation of vine-cuttings from any part of Europe was rigorously prohibited.

Mr. J. M. Wilson, of Rugby, writes (Jan. 29), with reference to Antares:—

"The subjoined measures may interest the readers of the astronomical column in Nature, vol. xi. p. 249. I will measure it again soon:—

Position.	Distance.	Date.
268·7	3·46	73·42

The additions to the Zoological Society's Gardens during the past week include a Clouded Tiger (*Felis macrocelis*) from Burmah, purchased; an Azara's Fox (*Canis azaræ*) from South America, presented by Mr. J. Williamson; a Common Paradoxure (*Paradoxurus typus*), a Bonnet Monkey (*Macacus radiatus*), and a Macaque Monkey (*M. cynomolgus*), all from India, presented by Mr. D. D. Abbott, Miss S. Melley, and Mr. F. G. Lane respectively.

*DETERMINATION OF THE VELOCITY OF LIGHT AND OF THE SUN'S PARALLAX**

I HAD the honour to submit to the Academy various improvements relating to the method devised in 1849 by M. Fizeau for the direct determination of the velocity of light. These improvements, tried upon a moderate distance (10,310 metres between the Ecole Polytechnique and Mont Valérien, $V =$ 298,500 kilometres, probable error below 0·01), entirely succeeded, and permitted me to affirm that the improved method was capable of giving results of great precision under the conditions of operating at a greater and better determined distance and employing more powerful apparatus.

The preparations of the expedition for observing the Transit of Venus drew the attention of astronomers to the utility of a precise determination of the velocity of light, for this velocity combined with certain astronomical constants allows the calculation of the sun's parallax, of which the direct observation demands such laborious voyages and the devotion of many astronomers. Thus, at the suggestion of M. Le Verrier, director of the Paris Observatory, and of M. Fizeau, member of the Council, the Council of the Observatory decided at the commencement of 1874 that a determination of the velocity of light should be undertaken without neglecting anything that could give to the operation all the desirable precision.

The Council did me the honour of confiding to me this important operation. Much honoured by and very happy at this decision, I should nevertheless have hesitated to accept so grave a responsibility had I not been strongly encouraged by M. Fizeau, who has not ceased during the whole duration of the labour to offer me the most liberal and precious advice.

After a searching examination of various stations I adopted the Observatory and the tower of Montlhéry, distant about 23 kilometres. I was guided in this choice by the consideration

---

* Translated from a paper read by M. A. Cornu before the Paris Academy of Sciences.